

Date: Thursday, 5/3/2007 11:34:24 AM
 User: Kim Johnston

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services		Drawing Name	: 412 X-TUBE INST,LOW NARROW FWD	
Job Number	: 32178		Part Number	: D412664105	
Estimate Number	: 12816		Drawing Number	: D412-664 UNDER REV	
P.O. Number	: N/A		Project Number	: N/A	
This Issue	: 5/3/2007		Drawing Revision	: U/R	
Prsh Rev.	: NC		Material	: N/A	
First Issue	: N/A		Due Date	: 6/1/2007	
Previous Run	: 32177		Qty:	1 Um: Each	
Written By					
Checked & Approved By	: <u>5/01/05.03</u>				
Comment	: Est Rev/ New Issue 07-04-05 JLM				

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	DC	DOCUMENT CONTROL
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Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D412-664-105 CHG001

(1)

KJ 07-05-10

2.0	PACKAGING 1	PACKAGING RESOURCE #1
-----	-------------	-----------------------



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

3.0	D412664145	Crosstube 412 Low
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Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Crosstube 412 Low

Batch: B31595

4.0	AN635A	BOLT
-----	--------	------



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

Batch: M101697 X

5.0	AN636A	Bolt
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Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

Batch: M102929 X

7/4/11 SP

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA:  Date: 07/06/09
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 5/3/2007 11:34:24 AM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 412 X-TUBE INST,LOW NARROW FWD

Job Number: 32178

Part Number: D412664105

Job Number:



Seq. #: Machine Or Operation:

Description :

6.0 MS21042L6

Nut



Comment: Qty.: 6.0000 Each(s)/Unit Total : 6.0000 Each(s)

Nut

Batch: M101660 X

7.0 AN960JD616

Washer



Comment: Qty.: 18.0000 Each(s)/Unit Total : 18.0000 Each(s)

Washer

Batch: M103641 X

7/6/17 SD

8.0 QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

PC 7/8/17 (2) C 07/06/08 ①

9.0 PACKAGING 1

PACKAGING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Identify and pack for shipping as per PPP D412-664-105

DRAFT 7/6/18

10.0 QC21

FINAL INSPECTION/W/O RELEASE



①

Comment: FINAL INSPECTION/W/O RELEASE

7/6/08

Job Completion



7/6/08

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO.	REV. C
		D412-664-145	SHEET 1 OF 3
DATE		TITLE	
07.03.29		CROSSTUBE ASS'Y (412 LOW-N FWD) NTS	
A	06.12.21	NEW ISSUE	
B	07.03.01	CHG RUBBER CUSHION	
C	07.03.29	CHG CLAMP & RUBBER CUSHION LGTH.	

RELEASED07.04.24 ~~07.04.24~~**PARTS LIST:**

Qty	Part Number	Description
X	D412-664-145	CROSSTUBE ASSEMBLY (412 LOW-NARROW FWD)
1	D6019-128	CROSSTUBE
1	D2856-250-842	ABRASION STRIP
2	D2893-1	SUPPORT
1	D3189-3	CHAFING SHIELD
4	D3595-063-450	RUBBER CUSHION
2	MS21920-24	CLAMP
4	MS21920-25	CLAMP (OR MS21920-26)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

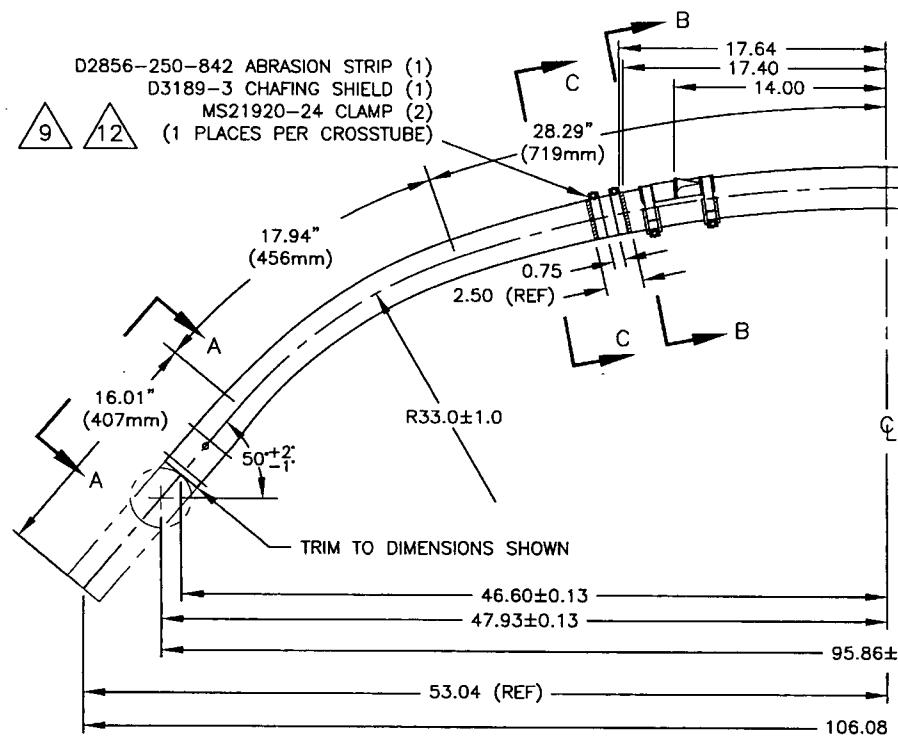
GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6019-128
FINISHED LENGTH = 124.48 ± 0.020 (BEFORE BENDING/TRIMMING)
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR D3189-3 CHAFING SHIELD AND ASSOCIATED HARDWARE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-XXX-YYY ABRASION STRIPS WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 COPY THAT WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
- 13) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 32178

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D2893-1 SUPPORT (1) 11
MS21920-25 CLAMP (2) 12
D3595-063-450 RUBBER CUSHION (2) 13
(2 PLACES PER CROSSTUBE)

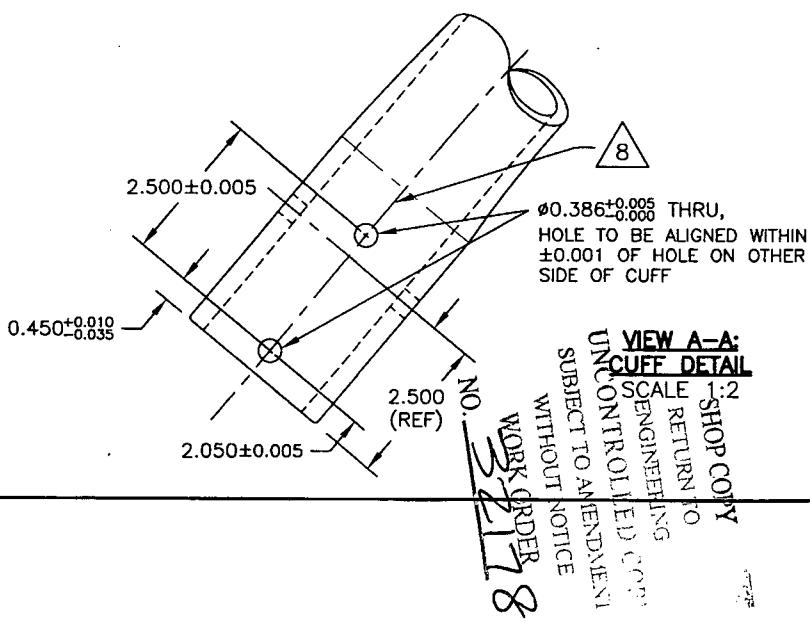
R86,0±1,0

19.36
±0.13

20.93
±0.13

27.02
(REF)

RELEASER
07-04-24



SECTION B-B

The diagram shows a cross-section of a bearing assembly. It consists of an outer ring with a central bore. Three callouts point to specific parts: 'D2893-1 SUPPORT (REF)' points to the outer ring; 'D3595-063-450 RUBBER CUSHION (UNDER CLAMP, REF)' points to the inner ring; and 'MS21920-25 CLAMP (REF)' points to a small circular component on the right side.

SECTION C-C

11. *What is the best way to increase the number of people who use a particular service?*

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DESIGN	9P
CHECKED	11
DATE	07.07.20

2 | Page

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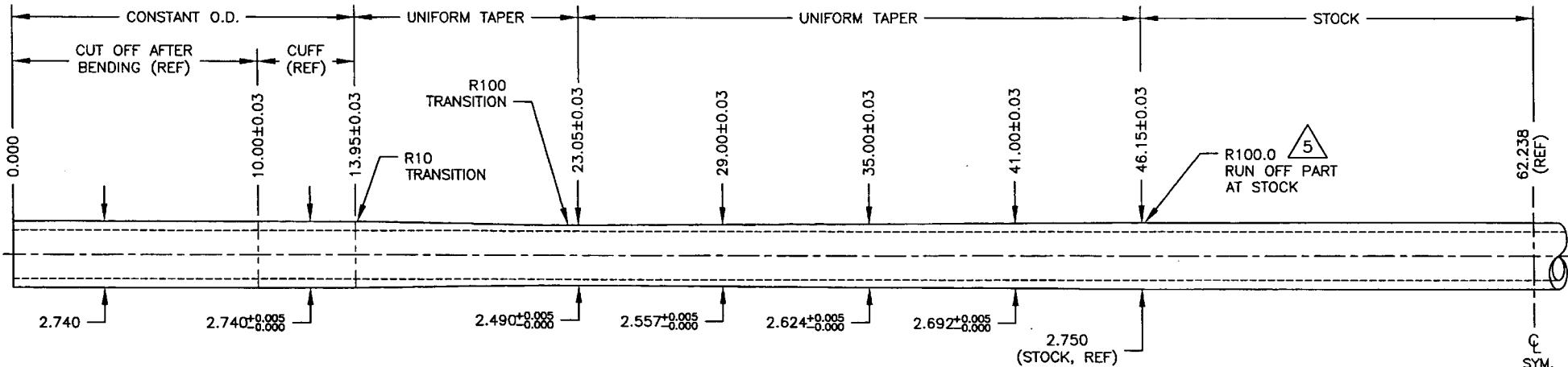
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HAWKESBURY, ONTARIO, CANADA

SHEET 2 OF 3

GOALS

SCALE

2 LOW-NARROW FWD) 1:8



D412-664-145 MACHINING DETAIL

NO. 2178

WORK ORDER

SHOP COPY

RETURN TO

ENGINEERING

UNCONTROLLED COPY

SUBJECT TO AMENDMENT

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DESIGN *gp* DRAWN BY *gp*
CHECKED *gp* APPROVED *gp*
DATE 07.03.29

DART AEROSPACE LTD.
HAWTHORPE, ONTARIO, CANADA
DRAWING NO. D412-664-145 SHEET 3 OF 3
REV. C
TITLE CROSSTUBE (412 LOW-NARROW FWD) SCALE 1:4

RELEASED
07.04.08